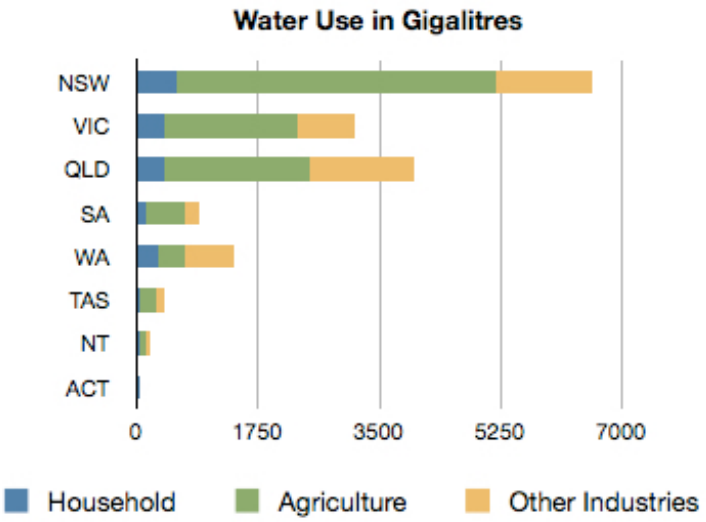
Session 4 : Water

In this session we will look at the use of fresh water.

Only 2.5% of the water in the world is fresh or salt free. Two thirds of this is locked up in snow and ice, and a third is underground in soil and aquifers. Only 0.3% is available in rain, rivers, and lakes. With climate change predicted to make rain events more unpredictable - more droughts and more floods - water conservation and management is becoming crucial.



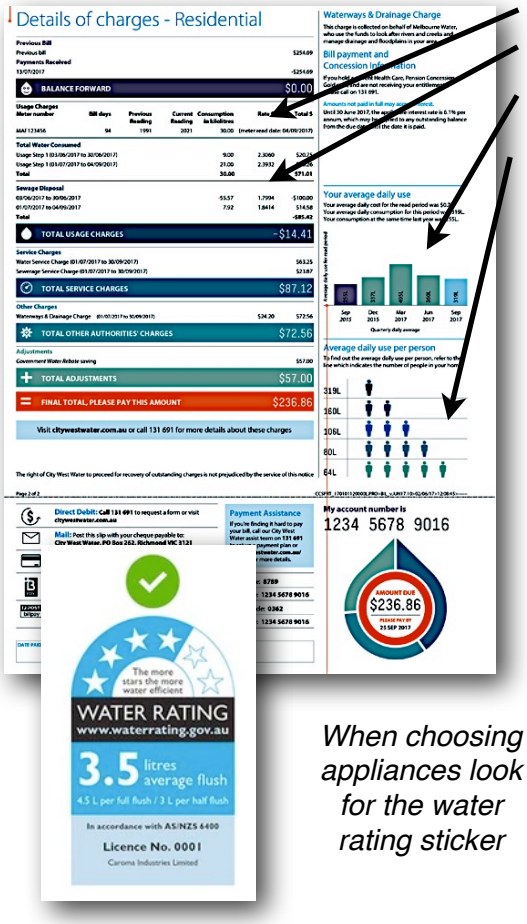
Most of our fresh water is used in Agriculture. Other Industries include manufacturing, electricity and gas production, and commercial business In QLD and WA, Mining is a large water user in the Other Industries data.

Our national average per person is 262 litres/day for household use.

This varies by State (litres/day/person)

NSW - 204	WA - 322
VIC - 177	TAS - 189
QLD - 214	NT - 602
SA - 177	ACT - 209

How Much Water Do You Use?

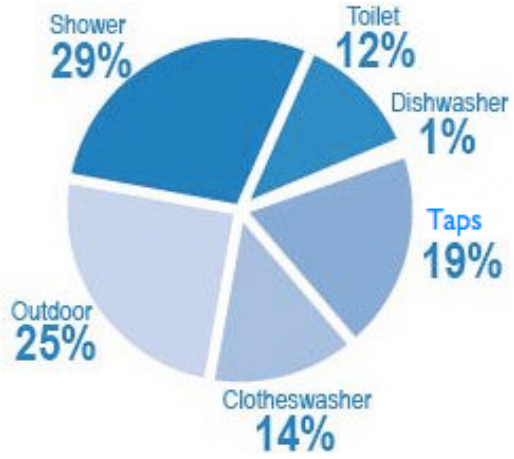


When choosing appliances look for the water rating sticker

Your bill will show the details of the meter reading the service supply charges (cost to be connected) a comparison with your use, and the year before and a guide to how you rate with other households

Worksheets for water usage on our website [4.1]

Where Do You Use Water at Home? [4.2]



Why Save Water at Home?

Domestic water use is only a small part of our national use, but everything we do to save water (and money) at home has other impacts too. [4.3]

- **Reduce energy use and greenhouse gas emissions:** It takes energy to pump, treat and supply water to our homes. We then use energy to heat that water. For every drop of water you don't use, you are saving energy and reducing greenhouse gas emissions.
- **Support the natural environment and wildlife:** Becoming water aware at home spills over into being water aware in business, in choosing what we buy, what we use, and our politics. Good water management policy and water efficient infrastructure is vitally important.

Low-No Cost Tips for Saving Water at Home

Anywhere with a Tap

- √ Fix any leaks - a new washer or tap head can saves litres per hour in drips
- √ Turn off the tap when not actually using the water.
- √ Collect any clean (enough) water from one task and use it in another.
  (Rinse water can be used for the first wash of dirty dishes or watering plants)
- √ Install aerator or low flow heads to make taps efficient water misers.

Kitchen

- √ Don't rinse dishes under a running tap, use a bucket or second sink.
- √ Collect any running water in a tub or bottle and use it on plants
- √ Wash vegetables and salad in the spinner bowl and save that water too.
- √ Don't defrost under running water, plan ahead and fridge defrost.
- √ Wait till the dishwasher is full, then put it on, and use it instead of the sink.
  (modern dishwashers use far less water than a couple of smaller hand-washed jobs)

Bathroom

- √ Fit a low-flow shower head.
- √ Don't leave the tap on when brushing your teeth - rinse, spit, on off.....
- √ Buy a shower timer (or one song on the phone) for a 3-4 minute shower.
- √ Consider a basin (sponge or cloth) bath if just a quick clean is OK.
- √ Use a bucket to collect the cold shower water before it starts to run hot.
- √ Ban baths - or for kids, just enough water to clean them (and for a couple of splashes)

Toilet

- √ Install a two button, low flush toilet cistern (flush water tank)
- √ If stuck with an old cistern, explore using tank inserts to reduce overall volumes.
  (clean river stones, a bottle filled with water or sand - just don't block or jam it)
- √ Only flush when necessary - "if it is yellow, let it mellow....." you get the idea.

Laundry

- √ Double check that things need full machine washing - maybe rinse & air dry?
- √ Start with a 4-star water and energy efficient washing machine, preferably a front loader, and then read the book - find the right setting for the task (water level, temperature, number of rinses, wash times) - and fully load per cycle.

Outdoors

- √ Redesign your garden - replace the grass lawn (or let it go brown in summer)
- √ Replant with local Australian native plants and trees - these will already be drought tolerant, and will suit the local native birds and insects.
- √ When needed - water deeply and infrequently, to encourage strong roots and deep water storage both in the ground and in the plants. Worms like that too.
- √ Mulch deeply - it stops evaporation, chokes weeds, and give mini-beasts a home.
- √ Rake and broom clean paths - don't use water spray cleaning.
- √ Hand water, don't use sprinklers unless supervised - intelligent watering works best.
- √ Got a pool - use a pool cover to stop evaporation, use a cartridge filter instead of wasteful back-washing, divert rain-water to top it up.

Planned Spending for Saving Water at Home

Greywater

Used water from bathrooms and laundries, some kitchen water (but not toilets, and dishwashers)

$ Grey Water Diverter Funnels - rubber or silicone funnels that can be pushed into outlet pipes, usually at inspection points, to block and divert the water into garden hoses. This is not recommended for edible plants or herbs, good for general gardens & grass [4.4]

$$$ Grey Water Systems - using commercial parts and plans to permanently divert grey water into a sequence of settling, filtering, and treatment processes, so that the end water can be used across the whole garden. Some systems use above ground pods, others use pipe and sand/gravel sub-soil networks. [4.5]

Rainwater Collection

$$ Downpipe diverters - replace sections of downpipes with leaf filter and diverter modules - connected to suitable diameter hoses to garden beds or storage tanks. [4.6]

$$$ Tanks - research first - a litre of water weighs I kilogram - so tanks need flat stable bases or stands. They also need clean input water, so gutters, diverters, and filters will need to be kept clean. Water from a tank flows according to the height from the top of the water in the tank to the final outlet point - hydrostatic pressure - but 1 meter only produces 1.4 PSI and a garden tap is typically 40 PSI - you may need a pump as well.

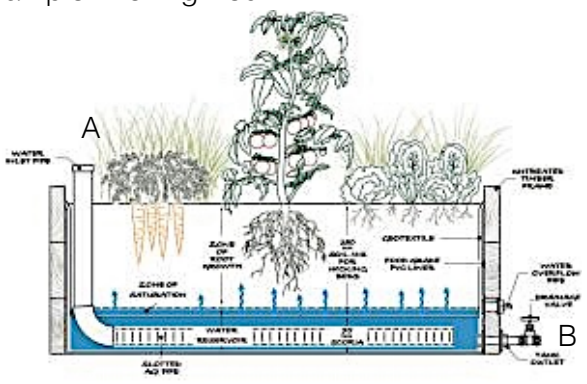
$$ Swales - study the flow of rain water across your garden. Think about changing the levels of garden beds, or building earth walls to create mini dams, or just small barriers to slow the flow of water across the garden.[4.7]

Warning - tanks and pools of still water are breeding grounds for mosquitoes

Garden Beds

$$-$$$ Wicking Beds - these are [4.8] constructed garden beds that enclose a water-proof inner membrane. This holds an inlet stand pipe (A); and is punctured by a drain pipe with tap (B). The bottom of the inlet pipe is covered with a layer of washed sand or gravel (the water layer), topped with a water permeable geo-fabric to separate the soil and plants from the water. The soil bed sits on the geo-fabric. The water in the base comes up to the plants as water vapour and straight into the roots, making these efficient and easy to manage systems.

Sample Wicking Bed



$-$$ Soaker Hoses - there are three types - above ground, granular rubber, hoses that weep water under pressure; - below ground, plastic piping with pre-cut slots that leak water at all pressures; and - plastic kit systems that drip and micro-spray from various screw in fittings and heads, while under pressure from a tap or pump.

Challenges

These are designed to be a fun way of exploring issues, making us aware of how reliant we are on the resources we have, as well as encouraging longer-term behavioural change.

For one day – Fill a bucket (10-15 litres) per person in your household. Can you get through the day without turning on a tap? Drinking, cooking, washing and using the dirty water for the toilet. Achieving 20 litres/day is a UN Water Target, many people have less.

For one week, or one day – Try to collect all the used water (use it on the garden), and measure and record it, and compare this to your State's average use per person data.

For one week – Break your habits - plan how you wash & shower; organise meals to make dish washing minimal and efficient; re-organise your plants for efficient water use;

Kids Fun - Ask them to write 3 minute shower songs, and record them for playback. Take them to a native plant nursery and let them choose a plant each. Assign them to path sweeping and make hand watering sessions part of their household duties.

Suggested Session Plan	
Catch Up - how has everyone's week been?	10 min
Review Water - what surprised you? how did your water use compare? step through the places of water use - how you you compare?	30 min
Low Cost Actions - which of these are you already doing? can you suggest other measures, other great ideas? how much ($) did you save?	30 min
Planned Spending - which of these have you already done? how has it worked out? what actions do you think you might take on?	30 min
Challenges and Fun Ideas - suggest other ideas and activities?	10 min
Before you close Session 4, take time to reflect on how the session went, think of steps that might be taken in the next session, consider how the others are reacting and responding. Think Head, Hands, & Heart.	10 min